

California State University, San Bernardino

**CSUSB ScholarWorks**

---

Theses Digitization Project

John M. Pfau Library

---

2003

## The impact of infant massage on the development of children with disabilities and children born at-risk for developmental delays

Maria Jesus Escobedo

Follow this and additional works at: <https://scholarworks.lib.csusb.edu/etd-project>



Part of the [Social Work Commons](#)

---

### Recommended Citation

Escobedo, Maria Jesus, "The impact of infant massage on the development of children with disabilities and children born at-risk for developmental delays" (2003). *Theses Digitization Project*. 2290.  
<https://scholarworks.lib.csusb.edu/etd-project/2290>

This Project is brought to you for free and open access by the John M. Pfau Library at CSUSB ScholarWorks. It has been accepted for inclusion in Theses Digitization Project by an authorized administrator of CSUSB ScholarWorks. For more information, please contact [scholarworks@csusb.edu](mailto:scholarworks@csusb.edu).

THE IMPACT OF INFANT MASSAGE ON THE DEVELOPMENT OF  
CHILDREN WITH DISABILITIES AND CHILDREN BORN  
AT-RISK FOR DEVELOPMENTAL DELAYS

---

A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino

---

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Social Work

---

by  
Maria Jesus Escobedo

June 2003

THE IMPACT OF INFANT MASSAGE ON THE DEVELOPMENT OF  
CHILDREN WITH DISABILITIES AND CHILDREN BORN  
AT-RISK FOR DEVELOPMENTAL DELAYS

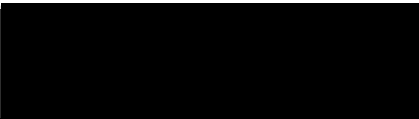
---

A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino


---


by  
Maria Jesus Escobedo  
June 2003

Approved by:

  
Dr. Ray E. Liles, D.S.W., Faculty  
Supervisor Social Work

June 5, 2003  
Date

  
Carol Anne Borino, M.A., Creative Home  
Programs Director

  
Dr. Rosemary McGaslin,  
M.S.W. Research Coordinator

## ABSTRACT

This project is a program evaluation of infant massage intervention and its impact in the overall development of infants and children born with disabilities or babies born at risk for developmental delays. A data extraction instrument was designed to collect existing information of Developmental and Language assessments that had been conducted on infants in a home-intervention program. Four different areas of development were compared between two groups, as well as environmental factors that may affect the outcome of the treatment. The results did not support the hypotheses. Actually, there were few unexpected results. The discussion section explains some of the significant differences found. The recommendations provide the next steps to follow in the delivery of service of programs for infants and children born with disabilities or at risk.

## DEDICATION

I dedicate this project to my two children, Ivan and Paola, for their involuntary sacrifices and support while in this program. A special thanks goes to my friends and co-workers at Creative Home Program for their patience, help, and unconditional support. To my dearest friends and siblings, here and abroad, who always had faith in my ability to succeed and provide encouragement when I needed it the most. Lastly, I dedicate this great effort to my parents, who were not present at the end of this program, but their love and upbringing will be with me forever.

## TABLE OF CONTENTS

ABSTRACT .....	iii
CHAPTER ONE: INTRODUCTION .....	1
Purpose of the Study .....	3
CHAPTER TWO: LITERATURE REVIEW .....	5
CHAPTER THREE: METHODS	
Introduction .....	14
Study Design .....	14
Sampling .....	16
Data Collection and Instruments .....	17
Procedures .....	18
Protection of Human Subjects .....	18
Data Analysis .....	19
Summary .....	19
CHAPTER FOUR: RESULTS	
Subjects Demographics .....	21
Family Demographics .....	22
Presentation of Findings .....	23
Discussion .....	25
CHAPTER FIVE: DISCUSSION	
Recommendations .....	28
Implications for Social Work Practice, Policy, and Research .....	29
APPENDIX A: INFORMED CONSENT .....	31
APPENDIX B: DATA EXTRACTION INSTRUMENT .....	33
REFERENCES .....	35

## CHAPTER ONE

### INTRODUCTION

The general health, safety, education and welfare of children in the United States are a major concern for professionals providing services for the disabled population. Social Work is one of the professions that need to explore and work on these areas of concern. In the last decade, the prevention of children's mental disorders has not improved (Shonkoff & Meisels, 2000). Mental health has been a problem with approximately 20% of children having diagnosable disorders (U.S. Department of Health and Humans Services, 1990). In the same source, surveys of child health revealed that 13.4% of children have emotional or behavioral disorders, 6.5% have learning disabilities, and 4% have developmental delays. Decreasing these percentages it requires a clear understanding of the causes, and the decline in the quality of children's environments that are associated with the problem (Shonkoff & Meisels, 2000).

Infants born with disabilities or at-risk conditions have a range of delays in their overall development. Children diagnosed with at-risk medical conditions usually do not develop normally and are often eligible for a

variety of intervention programs. To qualify for special services, a child must be at least 30% below his/her age level of development in one or more areas. These infants are entitled to receive different supportive services from Inland Regional Center (IRC) through the Early Start Program [ESP], (U.S. Congress, 1975). The ESP covers infants and young children from birth to three years of age.

IRC uses five categories to classify infants who receive their services: cerebral palsy, Down syndrome, mental retardation, autism, and general developmental delays. The last category includes but is not limited to premature, seizure disorder, hearing and/or visual impairments, physical mal-formation, drug exposure, shaken syndrome, or any other biological/medical condition that prevents the normal development of the infant.

Once an infant is accepted into IRC, a treatment and individualized plan is made with the participation of the legal custodian or parents of the infant. Part of the Early Start program is Infant Stimulation (IS) intervention, which is taught at the families' home (Allen et al., 1984). If the legal guardian accepts the voluntary participation in the IS, then the family is referred to an agency that provides the intervention.



Creative Home Program (CHP) is one of the contracted agencies that provides the IS intervention. In some cases, the infants are too fragile to receive the IS intervention. Therefore, in November of 2000, CHP added a new technique to the curriculum of the IS to fill the needs of these more fragile infants and to enhance the outcome of the intervention. This technique is Infant Massage [IM], (McClure, 1998).

#### Purpose of the Study

The purpose of this study was to conduct a Program Evaluation of the infant massage effect on the overall developmental differences in children. The findings in this study would assist the Director and Program Managers of the Creative Home Program agency in deciding to continue, modify, improve, limit, restrict, or eliminate the IM from the curriculum of the CHP. At the Social Work level, this study may help to evaluate the quality of service delivery provided to these children and their families. For instance if the parent was unable to make use of the educational training, because of a past history of poor parenting or lack of social support, a more intensive training program would be warranted. The role for Social Workers could be to advocate for higher quality

and specific intervention programs based on the family and child's unique needs.

The research question addressed in this study was: To what degree are the developmental problems of children with disabilities or born at-risk for development delays reduced by infant massage intervention? The first hypothesis was that all subjects who received the IM treatment, for at least 6 months, would show greater significant developmental gains than subjects in the control group. The second hypothesis was that subjects diagnosed with cerebral palsy and Down syndrome would have fewer developmental gains compared to premature children or children diagnosed with developmental delays that received the IM treatment. The last hypothesis predicted that subjects with two or more diagnoses and adverse environmental factors would have fewer developmental gains with IM compared to subjects with one diagnosis and favorable environmental factors. The environmental factors to consider would be low social economic status (SES), addicted parent, disintegrated or large families, and a history of domestic violence in the family. The four areas of development collected were perceptual/fine motor, social/emotional, language, and gross motor skills.

## CHAPTER TWO

### LITERATURE REVIEW

Identifying children in great need of intervention is one of the goals for every interventionist professional. Shonkoff and Meisels (2000) state that for every family situation, a unique analysis of risk factors will require a unique set of intervention strategies embedded within a developmental model. These authors anticipate that a single intervention strategy would not solve all developmental problems. They also add that intervention in one area may influence other areas of developmental stages.

One of the studies completed on at-risk infants addresses the efficacy of the Early Star Program (ESP) with socially disadvantaged families (Garber et al., 1981), and the findings indicated significant gains as the results of ESP. Other studies address the biological factors such as low-weight at birth or pre-term delivery (Bromwich & Parmelee, 1979; Rauh et al., 1988). Both studies showed that in most cases significant gains in general development could be made with the ESP combined with medical treatment. Currently, technological and

medical advances give this group of infants a better prognosis.

Furthermore, this group of infants seems to have problems connected to immature development rather than abnormal development (in Stacy, 1995). Immature development refers to premature infants, drugs exposure, or poor/non pregnancy care. Abnormal development refers to a more specific diagnosis such a cerebral palsy, Down syndrome or other syndromes, mutation or deformation, and brain underdevelopment.

One study addressed the development of severely handicapped children that have minimal potential for normal development (Guralnick & Bennett, 1987). These children showed lower intellectual functioning and impaired adaptive behavior in relation to normal children. Also, this group of children will develop at a lower rate compared to normal children. In addition, the complications in the perinatal and postnatal periods are directly related to the conditions connected to severe delays. In many cases the origin of the disability could not be determined. The recommendation of the above study is to make the ESP more suitable to the special needs of families and children. The IM may fit many of these babies and families' needs.

However, no single approach is suitable for all families (Allen et al., 1984). It is necessary for the ESP to be flexible and accommodate to the differences of families with varying SES. Besides, the ESP should integrate training into normal routines of families in order to reduce and alleviate some of the environmental concerns that will be next mentioned.

Parents with disabled or at-risk infants are at risk of great emotional set backs in dealing with the news that their child is developmentally delayed. Some examples of the emotional set backs could be blaming themselves (Freier, 1994), denial or stress (Shonkoff & Meisels, 2000) and seeing it as God's punishment. Many of these parents never overcome this disappointment. The parents' denial of the issue can greatly affect the outcome of the infants' development and prevent a more enhanced quality of life. Some environmental factors should be considered that might affect the intervention such as domestic violence, victimization, low literacy levels, lack of knowledge of existing resources in the community (Freier, 1994), and SES issues are examples of the environmental factors that need to be addressed (Allen et al., 1984).

According to McClure (1998), the relationship between the mother (or primary caregiver) and infant should be

mutually fulfilling to form a bond (Bowlby, 1969). This relationship develops from each member "adapting behavioral responses that allow the appropriate stimulation and cues provided by the other" (Freier, 1994, p. 177). Alcohol, illicit drug exposure, and stress in mothers (Carr, 1977; Freier, 1994) affects the interaction with the infants.

At the intake process, the CHP evaluator makes a full assessment of children using two instruments: the "Early Intervention Developmental Profile" (Rogers et al., 1975) known as the Michigan test, and the "Measurement of Language Skills in Infancy" (Bzoch-League, 1991) known as the scale Reel-2. The Michigan test assesses six areas of development: perceptual/fine motor, cognition, language social/emotional, self-care, and gross motor. The Reel-2 assesses receptive and expressive language skills, separated and combined. These two tests have been standardized on normal children and are used to analyze a child's developmental pattern in areas of deficiency that may need remedial focus, and also to determine the severity of the deficiencies.

The Infant Stimulation is a Play-Based intervention technique that may reduce or help in overcoming the disadvantages with which these infants were born. These

techniques take into account the theories of Piaget (1952), Bowlby (1969, 1996), and Ainsworth (1973) that focus on the developmental processes of infants and young children. These theorists developed explanations for normal progression in the physical, emotional, cognitive and social changes that occur during the course of natural growth and development (in Stacy, 1995). During the natural play with the child in the IS, the interventionist encourages those areas of low development by repetition and constant interaction. The caregiver is educated in these stages of development and is motivated to participate. The caregiver begins to apply the intervention in the daily activities with the infant. The time, consistency, and commitment of the caregiver are pertinent in the possible positive future outcomes of any ESP (Shonkoff & Meisels, 2000).

The IM is the most appropriate intervention for the more fragile infants, of course, combined with the IS. The IM consists of a daily 15 minutes of gentle massage on the whole body of the infant provided by the primary caregiver. The caregiver receives the training through modeling, verbal guidance, and pictures from a certified instructor from CHP (McClure, 1998). The IM is provided mostly to low-functioning infants with an overall age

level of development between one to eight months, regardless of their chronological age. The ideal stage for the infants to receive IM is before the crawling skill is present in the child's repertoire. This level is based on the Early Intervention Developmental Profile or Michigan test. It is the criteria of the interventionist to offer the IM to the caregiver. In order to begin the program, it is required to have a parent's consent and the primary physician authorization.

In the Field's study (1999), a significant reduction in stress was associated using a combination of two techniques, the IM and pacifier-use sucking, in infants who had any of the following conditions, colic and sleep problems, premature, and cocaine or HIV-exposed. These stresses are the symptoms associated with the risk factors mentioned above. Low tolerance to touch, lights, sounds and voices, and to interactions with others may result in the infant rejecting their surrounding environment, including the mother. The IM technique promoted the bonding process and, eventually, improved attachment (Bowlby, 1969). "The purpose is to facilitate and help enhance the loving relationship between an infant and the caregiver" (McClure, 1998, p. 1).



Fields' (1999) indicates the effects of massage as follow: after 15 minutes of daily massage the infants spent more time in the active, alert and awake states; cried less; and went to sleep twice faster than they did from rocking. Over a six-week period, the massaged babies in this study gained weight, improved on emotionality, sociability, and increased serotonin levels indicating less depression.

The development of attachment security in infants was statistically significantly higher in those who received IM by their mothers more than one time per week than the infants of mothers who massaged their infants less than once per week (Jump, 1999). Attachment security was assessed using the Attachment Q-set and the 12-month follow up. The benefits of the IM were demonstrated in the realm of socioemotional development.

Bowlby (1969) emphasized the determinant of early development in caregiving relationship. When working with caregivers and infants to promote attachment, the importance of direct observations, participation, and guidance are all-important techniques. Bowlby also (1973, 1980) hypothesized that the human infant is born pre-adapted by evolution for social interactions. Therefore, the child's mother must allow the development

of autonomy and the interconnectedness of the child with other individuals. He also stated that attachment and exploration develop within the context of supportive and consistent interactions. The IM facilitates and helps enhance the loving relationship between an infant and its caregiver. The IM encompasses all of the elements of the bonding process (McClure, 1998).

When training the caregiver to adapt the intervention in daily activities, the interventionist must consider the diagnosis, the child and family's unique needs, and the environmental factors. Education and commitment of the caregiver will be the most important challenge the interventionist will face to make the intervention effective. The purpose of any intervention is to reduce or help in overcoming the disadvantage with which those infants were born.

Guided by the normal development levels of the Michigan and Reel-2 tests, the interventionist and the caregiver will concentrate more in increasing the skills in any areas that show low development during the natural play with the infant. The IM will be the most appropriate technique to be added in the intervention for the most fragile infants. Promoting the natural evolution for social interactions will take the relationship between the

caregiver and infant to the attachment and bonding process. This process is the first step to complete before any intervention is considered.

## CHAPTER THREE

### METHODS

#### Introduction

Infant Stimulation (IS) was the primary intervention used for infants with disabilities or infants born at-risk for developmental delays. Most of the fragile infants received Infant massage, the treatment under investigation in this study, along with the IS. The purpose of the IS and the IM was to reduce the disadvantages of these infants. An evaluation of the IM program was conducted to investigate the developmental differences between two groups. A comparison in development between one group of infants who received IM and another group of infants who never received IM was completed. Also, these two groups of infants had the same diagnoses, either premature, Down syndrome, cerebral palsy, developmental delays, seizures or abnormal EEG, or other syndrome or medical condition, and/or more than one diagnosis.

#### Study Design

The study provided a Program Evaluation (Grinnell, 2001) of the IM's technique and its impact on the children's overall development. This study was conducted using a secondary data analysis of the available variable,

which contains some limitations. One of the limitations of the study was the inability to get feedback from the caregivers due to the anonymity required in order to evaluate the program. Another limitation was the behavior a child might exhibit that was perceived by the caregiver as developmental but was not necessary an evaluated skill. Examples of these could be better and longer sleeping time, better mood, better appetite, increase in weight, more tolerance to any touch, and more visual contact. A quantitative method was the most appropriate for this research (Grinnell, 2001).

The first hypothesis was that all subjects, who were receiving IM for at least 6 months consistently, would show greater significant development gains compared to subjects in the control group. The second hypothesis was that subjects with cerebral palsy and Down syndrome diagnoses would have fewer developmental gains with IM compared to premature subjects or subjects diagnosed with developmental delays. The third hypothesis predicted that subjects whose received IM for at least 6 months and have non favorable environmental factors would show fewer developmental gains compared to their counterpart subjects that have favorable environmental factors.

## Sampling

The subjects in this study were 84 infants and young children born-at-risk or with disabilities. The subjects were current or former clients receiving IS through the ESP from IRC. Forty subjects received IM once the technique was added to the IS curriculum. Forty-four subjects never had the opportunity to receive IM because the technique was not available in the time they were receiving ESP. The other obstacle for this last group was that the subjects were above the recommended developmental age level for the treatment, they were crawling already. The second group of subjects was selected on the basis of their diagnoses to match the control group. All subjects' ages were between 4 months and three years. There were a wide variety of SES and background within the subjects.

There were two criteria to consider for the interventionist in order to recommend the IM to the child's caregiver. The first was if an infant was considered to be developmentally slow or very fragile. The second criterion involved the developmental stage of the infant; a child must be between 2-3 to 7-8 months of age level and they must not yet have the crawling skill in their repertoire. Then, the IM was the additional intervention to the IS. The next step was to get the

primary physician's authorization and the verbal consent of the caregiver so that the certified trainer could begin the IM training.

#### Data Collection and Instruments

The data collected included 4 areas of developmental skills evaluated by each child. These areas were fine motor, language, social-emotional, and gross motor. Two instruments, already in the subjects' files, provided the information. For the areas of development, the "Early Intervention Developmental Profile" (Rogers et al., 1975) known as the 'Michigan Profile' was collected. This instrument assessed developmental skills within a 3 to 6 months age range. The other assessment revised was the "Measurement of Language Skills in Infancy" (Bzoch-League, 1991) known as the scale 'Reel-2'. This instrument was more precise in assessing language skills and went every two months age range. The 'Reel-2' contained receptive and expressive sub-sections skills that are evaluated independently. These two tests have been standardized on normal children.

There were more variables to be considered that may affect the impact of the IM. Most of these variables were the subject's external or environmental factors,

ethnicity, SES, family situation, and a dual or multiple-diagnosis. These data were found in the subject's file as a part of the family and child history provided by IRC. The independent variable was the impact of the IM on the degree of developmental gains by the child and was compared with a matched-diagnosis subject who did not receive the IM treatment.

### Procedures

The student researcher following the list of subjects provided by the agency conducted a review of files. The list of subjects who received the IM gave the data for each subject. Then, matched-diagnosis subjects were located in the current or former agency's clients. A random check of the data collected was conducted, every fifth file, by a trained or experienced individual to ensure reliability. The time indicated for the collection of data was between July and December of 2003.

### Protection of Human Subjects

This study used anonymity as requested by the Director of the Creative Home Programs. Each subject was given an assigned number, no names, addresses, telephone numbers, or any other personal information was recorded that could identify the subjects or their families. The



Director of the agency provided a letter of support as an informed consent (Appendix A).

### Data Analysis

The statistical analysis used for this study was an independent t-test (Shaffer and Grinnell, 2001). Every area of development was cumulative and was added to the subject's repertoire before going to the next skill. It was possible that subjects skipped one or two of the specific skills determined in the tests. However, subjects must have more than 50% of the skills evaluated in one stage to be credited before going to the next stage. The Michigan's graph profile and the percentages of the Reel-2 provided the data collected. It was a drop of forty-seven subjects with two or more diagnoses to establish more significant differences between and within groups. Thirty-seven subjects were left for the project. Fourteen received the IM and twenty-three did not.

### Summary

This study conducted a secondary data analysis of the available variables by comparing developmental gains between infants with disabilities and infants born at-risk for developmental delays who received IM and those infants with the same diagnoses that never received the IM. The

final goal of this study was a Program Evaluation of the IM in the IS intervention. Two assessment tools, the "Early Intervention Developmental Profile," and the "Measurement of Language Skills in Infancy," provided the data to determine if there were differences between the two groups of infants. A data extraction instrument was designed to collect the information.

## CHAPTER FOUR

### RESULTS

#### Subjects Demographics

Eighty-four male and female children with different diagnoses formed both groups. Seventeen were premature, twelve had Down syndrome, seven had seizures or abnormal EEG, sixteen had two diagnoses, twenty-two had three or four combined diagnoses, and eight had five or more diagnoses recorded in their files. The variety of the diagnoses, besides the mentioned above, were cerebral palsy, hydrocephalus, hearing or retinal problems, heart or spine defects, pulmonary conditions, internal brain hemorrhage, congenital or chromosome anomalies, cleft palate, club feet, drug exposure, organ disease or disorder, meningitis, hormone deficiency, and mental retardation between others. For the significant statistical differences, the data for thirty-seven subjects was processed. These subjects were diagnosed premature, Down syndrome and seizures/abnormal EEG only. Fourteen received the IM treatment and twenty-three did not.

### Family Demographics.

Forty-nine families were English speaking and thirty-five were Spanish speaking. Forty-two families had an income at or below \$16,000 per year. Twenty-six of this first income level was in the not-IM group. The second level of income of eighteen families was between \$16,000 and \$24,000 per year. Fourteen families had \$24,000 or above per year in income. There were thirty-three families with both parents at home and five families with one parent only at home in the control group. In the counterpart group, thirty-one families had both parents at home and eleven families had one parent at home only. The number of siblings or other children at home besides the subject were as follows: twenty-five families had one more child, twenty-four had two more children, sixteen had three more children at home, and twelve had four to seven more children at home. For the non- favorable environmental factors like, drugs, alcohol, domestic violence, poor pregnancy control, developmental delays on sibling or parent, there were twelve families with one of these factors in the control group and nine families for the other group. The extra resources outside the nuclear family to consider were physical or occupational therapy, California Children Services, private health insurance,

respite services, and other adult in home besides the parents. In the control group, there were six families with one resource, twenty-four families with two resources, and four families with three resources. For the other group, there were nineteen families with one, thirteen families with two, and five families with three resources. The parents' education was between four and seventeen years in both groups.

#### Presentation of Findings

The purpose of this study was to conduct a Program Evaluation of the IM's effect on the overall developmental differences in perceptual fine motor, gross motor, social/emotional, receptive and expressive language skills. A Pearson correlation indicated some statistical significance between groups. The t-test was run and no statistical significance was observed. When the subjects with two or more diagnoses were excluded of the groups, the t-test showed some statistical significance as follows.

There was a statistical significance ( $p < .031$ ) when a sector of premature subjects of 23 to 28 week-gestation were an average of 4 months advanced in language skills compared to the 29 to 32 week-gestation subjects.

Actually, there was a constant tendency of higher skills in gross motor, perceptual/fine motor, and social/emotional areas for the younger subjects in respect to the older, however, without it being statistically significant. There was a statistical significance ( $p < .036$ ) in the social/emotional area of development of 7 months average of advance in the not-IM group respect to the IM-group.

The number of parents at home in relation to higher skills in their children had a statistical significance. The subjects in the not-IM group were in average 7 months advance ( $p < .023$ ) in gross motor skills with one parent at home compared to the IM-group with one parent at home only. In perceptual/fine motor skills, there was a 5 months advance for the subjects in the not-IM group with one parent at home compared to the IM-group without a statistical significance, however. Within groups, there was a statistical significance of 6 months ( $p < .044$ ) for gross motor skills and 7 months ( $p < .022$ ) for perceptual/fine motor skills for not-IM subjects with one parent at home compared to not-IM subjects with both parents at home.

The number of siblings at home impacted the expressive and receptive language skills of the subjects. There was a clear tendency of higher language skills

related to fewer siblings at home for both groups. However, the statistical significance was only within the not-IM group. For the expressive language, there were 36% higher skills ( $p < .017$ ) for the not-IM subjects with one sibling at home compared to the not-IM subjects with two or more other siblings at home.

The number of resources at home was positively related to higher skills in gross motor and perceptual/fine motor within the IM-group. There was a negative relationship within the not-IM group for both skills. There was a statistical significance of 6 months advance ( $p < .032$ ) in gross motor skills within the not-IM group with one resource at home compared to two or more resources for the same group. Between groups, there was a significant difference of 7 months advance in gross motor skills for the not-IM subjects with one resource at home compared to the counterpart IM-group. There was a tendency of higher in the perceptual/fine motor skills with one resource at home for the same comparison, without statistical significance.

## Discussion

The results of the study did not support the hypotheses that subjects who received the IM treatment

would show greater significant developmental gains compared to subjects without the treatment. There were not significant developmental gains between groups when all subjects were compared for any of the hypotheses. When the subjects with multiple diagnoses were dropped, there was a partial opposite result supporting the second and third hypotheses. Regardless of the treatment, the language skill advance of the youngest premature subjects was higher compared to the older premature subjects. It seemed that one favorable environmental factor, a more intense medical treatment, made the favorable impact on language development. Within the not-IM group, the adverse environmental factors in the numbers of parents, siblings or resources at home produced favorable developmental outcomes for the subjects.

The two assessments that provided the data collected evaluated the subjects in different chronological age of their lives. Some of them were evaluated immediately after the treatment was given. Some others may have been evaluated from three months to a year later after the IM-training was taught to the caregiver. It was unclear how the treatment, natural developmental progress of the subjects, and the environmental factors impacted the evaluation and, consequently, the results of the study.



Some of the interventionists that provided the IM training to the primary caregiver believed that many of the caregivers did not apply or were not constant in the recommended 15 minutes of daily massage for the subjects. Also, these interventionists reported other benefits that were not included in the measurement tools. Some of benefits were better regulation of sleep patterns, less irritability, increased or better mood, more tolerance to touch and to social interaction, an increase in visual contact, and an increase or regulation in normal bowel movements between others.

## CHAPTER FIVE

### DISCUSSION

All subjects received the IS intervention. There was some form of massage provided to most of the children. The IS seemed effective by itself before and after the inclusion of the IM technique. There were enormous differences between families and differences on their needs. Even though the subjects in this study were matched with subjects with the same diagnoses, they may not have had similar needs.

Every infant born at-risk or disabled has unique family situations and circumstances that may favor or prevent the natural development. Any intervention may enhance the natural development. However, it is the caregivers' ultimate responsibility to apply the philosophy of the intervention at home in their daily activities.

#### Recommendations

Following the interventionists' suggestions, a new tool may be designed that measures other specific benefits of infant massage. Then, CHP could implement ways to encourage caregivers to perform the IM technique at least three times per week in order to stimulate development in

the infants. Also, it might be appropriate to develop a systematic method of evaluation which takes into account the pre and post-treatment along with the child's age, level of development, and date of the IM training to the caregiver. The joint participation of interventionists and caregivers could be the best teamwork to make interventions with infants more effective.

#### Implications for Social Work Practice, Policy, and Research

Professionals working for and with disabled populations and their families may find avenues to motivate and support caregivers by increasing their contact with the families. Making more home-visits, more phone calls, following up more closely on the progress of the clients, and increasing resources may enhance the lives of this disabled population.

Reinforcing existing laws for this minority population should be of concern to practitioners. Taking into account the unique family situation and developing services for each specific condition could ensure better service delivery. Future research in this area should include the input of professionals working in direct contact with the client and their families.

Identification of deficiencies and strengths in the implementation of a new technique or program may help with the optimal service provided. Effective programs that enhance the lives of children born at-risk or with disabilities should be our goal.

APPENDIX A  
INFORMED CONSENT



PHONE 909.359.8012

FAX 909.359.4556

Post Office Box 4869  
Riverside, CA 92514

May 20, 2002

Mari Escobedo  
123 E. South St.  
Rialto, CA 92376

Dear Mari,

I, Carol Anne Borino, Director of Creative Home Programs, hereby grant you, Mari Escobedo, permission to view and collect information from the client files for this agency, including former and current clients, in order to complete your research project for Cal State University. It is my understanding that you will be examining the outcomes for children whose primary caregiver received infant massage training, as compared to a control group. I understand you may need to conduct interviews with the teachers of Creative Home Programs, but that clients and their families will not be contacted, nor will any identifying information, such as name, address, phone number, birth date, etc. be taken from the client files or contained within the research data.

Sincerely,

A handwritten signature in cursive script that reads "Carol Anne Borino".

Carol Anne Borino, M.A.  
Director

APPENDIX B

DATA EXTRACTION INSTRUMENT

Subject#	Diagnosis	Perc/FM	Langu	Social Emotio	Gross M	Recept Lang	ExpressLang	# Parent	# Children	\$ Level	Risk Fact	P' Educ	Nat Lang	Resources



## REFERENCES

- Ainsworth, M.D. (1973). The development of infant-mother attachment. In B.M. Caldwell H.N. Rocciuti (Eds.), Review of child development research. V3 University of Chicago.
- Allen, D., Affleck, G., McGrade, B., & McQueeney, M. (1984). Factors in the effectiveness of early childhood intervention for low socioeconomic status families. Education and training of the Mentally Retarded. 19(4): 254-60.
- Bowlby, J. (1969). Attachment and loss: Vol.I (Attachment). New York: Basic Books.
- Bowlby, J. (1973). Attachment and loss: Vol.II (Separation, Anxiety, and Anger). New York: Basic Books.
- Bowlby, J. (1980). Attachment and loss: Vol.III (Loss, Sadness, and Depression). New York: Basic Books.
- Bromwich, R., & Permelee, A. (1979). An Intervention Program for Preterm Infants. Infants Born at Risk. New York:Spectrum Pl
- Bzoch-League, (1991). Measurement of Language Skills in Infancy. Scale Reel-2, 2<sup>nd</sup> Ed. Pro-Ed, Austin, Texas.
- Carr, E.G. (1977). The motivation of self-injurious behavior: A review of some hypotheses. Psychological Bulletin, 84, 800.
- Department of Health and Human Services, (1994). September. The Statement of the Advisory Committee on Services for Families with Infants and Toddlers. Washington, D.C:Author.
- Field, T. (1999). Sucking and massage therapy reduce stress during infancy. Lewis, M. (Ed); Ramsay, D.(Ed). Soothing and stress. (Pp. 157-169). Mahwah, NJ.
- Freier, K. (1994). In utero drug exposure and maternal-infant Interaction: The complexities that affect this dyad and their environment. Infant Mental health Journal. Sum; Vol 15(2): 176-188.

- Garber, H., Haywood, H., & Begab, M. (1981). Psychosocial Influences in Retarded Performance. Baltimore: University Park Press.
- Grinnell, R. (2001). Social work research and evaluation: Quantitative and qualitative approaches. Sixth Ed. Itasca, IL: F.E. Peacock.
- Guralnick, M., & Bennet, F., (1987). The effectiveness of early intervention for at-risk and handicapped children. Orlando: Academic Press.
- Jump, V.K. (1999). Effects of infant massage on aspects of the parent-child relationship: An experimental manipulation. The Sciences and Engineering. Oct; Vol 60(4-B): 1886.
- McClure, V. (1998). Teaching infant massage: A handbook for instructors.
- Piaget, J. (1952). The origins of intelligence in children.
- M.Cook, trans. New York: International Univ. Press.
- Rauh, V., Achenbach, T., Nurcombe, B., Howell, C., & Teti, D. (1988). Minimizing Adverse Effects of Low Birthweight: Four-Year Results of an Early Intervention. Child Development, 59, 544-553.
- Rogers, S., Donovan C., D'Eugenio, D., Brown, Sara, Lynch, E., Moersch, M., & Schafer, S. (1975). Early Intervention Project for Handicapped and Young Children. Institute for The Study of Mental Retardation and Related Disabilities, The University of Michigan.
- Shaffer, R. and Grinnell, R. (2001). Statistics for social workers. Fifth Ed. White Plains, NY: Longman.
- Shonkoff, J. & Meisels, S. (2000). Handbook of early childhood Intervention. Second edition. Cambridge University Press, New York.
- Stacy, T. (1995). An evaluation of EIP efforts with severely and profoundly retarded infants and young children. MSW Thesis Project, Cal State Univ. San Bernardino.

U.S.Congress, (1975). Education for all handicapped.  
Children Act of 1975. World Book 1998, Multimedia  
Encyclopedia.